Advanced Medical Therapy - Adipose-derived Stem Cell Therapy

Cell based therapies (including Stem Cells and Platelet-rich Plasma) offer exciting potential in treating conditions such as osteoarthritis

Adipose tissue is a rich source of adipose-derived stem cells. These cells have an ability to differentiate into cartilage cells.

Adipose-derived stem cells may improve symptomatic arthritis by :

- reducing inflammation
- assisting the healing mechanism
- replacing/regenerating damaged cartilage

Are stem cells safe ?

The use of adipose-derived stem cells for the treatment of arthritis and other conditions is in a preliminary stage.

Current research indicates that it is a safe procedure.

- Clinical trials involving adipose-derived stem cells with follow up of up to two years have not demonstrated any adverse effects (Garcia-Olmo, et al. 2005).
- Bone marrow stem cells used for treatment of arthritis have not shown adverse outcome in over 10years of follow-up (Wakitani, et al. 2010).

Adipose-derived stem cells are an autologous medium and taken from your own body.

What is the evidence ?

Laboratory based trials have confirmed the ability of adipose-derived stem cells to differentiate into cartilage (Diekman, et al. 2010).

Adipose-derived stem cells have shown cartilage regrowth and functional improvement in animal studies (Dragoo, et al. 2007).

Bone marrow derived stem cell trials have shown pain and function improvement with follow-up imaging indicating improvement in cartilage volume (Wakitani, et al. 2007).

Blood derived stem cell therapy when combined with orthopaedic arthroscopy has shown biopsy confirmed regeneration of cartilage like tissue (Saw, et al. 2011).

What is Involved ?

Adipose-derived stem cell therapy involves a harvest procedure performed under local anaesthetic and light sedation.

Adipose tissue is taken from the body (usually the abdomen) using a procedure similar to liposuction.

Harvested adipose tissue undergoes further processing to extract the adipose-derived stem cell component.

Patients will receive up to four injections of adipose-derived stem cells into their arthritic joint.

Conditions may require orthopaedic intervention prior to stem cell therapy.

All patients who undergo adipose-derived stem cell therapy will have formal follow-up with their treating physician.

Contra-Indications

Whilst current research indicates that adipose-derived stem cell injections are a safe therapy, it is contra-indicated in the following conditions :

- pregnancy
- cancer
- some bleeding disorders

Cost

Currently there is no Medicare or Private Health Fund rebate for this procedure.

Research

- Diekman B, et al. Chondrogenesis of Adult Stem Cells from Adipose Tissue and Bone Marrow: Induction by Growth Factors and Cartilage Matrix. Tissue Eng. 2010; 16(2):523-533
- Dragoo J, et al. Healing full-thickness cartilage defects using adipose-derived stem cells. Tissue Eng. 2007; 13(7):1615-1621.
- Garcia-Olmo D, et al. A phase 1 clinical trial of the treatment of Crohn's fistula be adipose mesenchymal stem cell transplantation. Dis Colon Rectum. 2005; 48(7):1416-1423
- Saw KY, et al. Articular cartilage regeneration with autologous peripheral blood progenitor cells and hyaluronic acid after arthroscopic subchondral drilling: A report of 5 cases with histology. J Arthroscopic and Rel Surg. 2011; 27(4):493-506.
- Wakitani S, et al. Repair of articular cartilage defects in the patello-femoral joint with autologous bone marrow mesenchymal cell transplantation: three case reports involving nine defects of five knees. J Tissue Eng Regen Med. 2007; 1(1):74-79.
- Wakitani S, et al. Safety of autologous bone marrrow-derived mesenchymal stem cell transplantation for cartilage repair in 41 patients with 45 joints followed for up to 11 years and 5 months. J Tissue Eng Regen Med. 2011; 5(2):146-150.